CLAIMS

What is claimed is:

1. A method for preventing oxidative corrosion of a metal, said method comprising the steps of:

providing a metal or a device containing a metal wherein said metal is susceptible to oxidative corrosion;

providing an anti-corrosion composition, said composition comprising an effective amount of an anti-corrosion agent comprising a lower alkyl carboxylic acid moiety, said composition further comprising a material capable of forming a moisture retentive barrier over a surface of said metal; and

applying said composition to a surface of said metal, wherein said composition forms an anti-corrosive, moisture retentive barrier over said surface.

2. The method of claim 1, wherein said lower alkyl carboxylic acid moiety is in the form of a lower alkyl carboxylic acid anion.

3. The method of claim 1, wherein said applying step comprises the steps of:

applying an anti-corrosion solution comprising an effective amount of said anti-corrosion agent in a polar solvent, said agent comprising a lower alkyl carboxylic acid moiety to a surface of said metal; and

subsequently applying said moisture retentive barrier over said surface.

4. The method of claim 1, wherein said anti-corrosion agent and said material capable of forming a moisture retentive barrier over a surface of said metal are in powdered form.

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5. The method of claim 1, wherein said anti-corrosion agent and said material capable of forming a moisture retentive barrier over a surface of said metal are both provided in powdered from to produce a powdered composition; and wherein said powdered composition is applied to a surface of said metal by powder metallurgy processing.

6. The method of claim 1, wherein said material capable of forming a moisture retentive barrier over a surface of said metal is selected from the group consisting of a polar liquid, a nonpolar liquid, a viscous material, an organic liquid, a polymeric material and a petroleum-based substance, and mixtures thereof.

7. The method of claim 1, wherein said composition further comprises any one of a polar liquid, a non-polar liquid, a surfactant, an antioxidant, all organic liquid, a polymeric material, a petroleum-based substance, a buffering material, or graphite or particulate carbon in a suspension.

8. The method of claim 1, wherein said anti-corrosion agent is packaged for delayed release.

9. The method of claim 8, wherein said anti-corrosion agent is encapsulated.

10. The method of claim 1, wherein in said composition, said anti-corrosion agent is present at a concentration from about 0.2 to about 60 percent by weight.

11. The method of claim 1, wherein said composition is prepared in concentrated form and then diluted.

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12. The method of claim 1, said method further comprising, following said applying step, the step of applying a further coating layer over said surface.

13. The method of claim 12, wherein said further coating layer is applied by a process selected from the group consisting of painting, electro-plating and electro-polishing.

14. The method of claim 1, wherein said applying step comprises using said composition as a lubricant for a surface of said metal.

15. The method of claim 1, wherein said applying step comprises using said composition as a pump oil or brake fluid.

16. The method of claim 1, wherein said lower alkyl carboxylic acid moiety is derived from a C1-C6 carboxylic acid.

17. The method of claim 1, wherein said lower alkyl carboxylic acid moiety is derived from a C1-C6 carboxylate anion.

18. The method of claim 17, wherein said C1-C6 carboxylate anion is selected from the group consisting of formate, acetate, propionate, butyrate and 2-methyl propionate, and mixtures thereof.

19. The method of claim 18, wherein said C1-C6 carboxylate anion is associated with a cation selected from alkali metal or alkaline earth metal cations.

20. The method of claim 19, wherein said cation is sodium.

21. The method of claim 1, wherein said lower alkyl carboxylic acid moiety is derived from sodium propionate.

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22. The method of claim 1, wherein said anti-corrosion agent is ingestible by humans.

23. The method of claim 22, wherein said composition further comprises at least one additional anti-corrosive agent that is different from said lower alkyl carboxylic acid moiety and that is also ingestible by humans.

24. The method of claim 23, wherein said at least one additional anti-corrosion agent comprises a 2,4-trans, trans-hexadiene moiety.

25. The method of claim 24, wherein said 2,4-trans, trans-hexadiene moiety is in the form of a 2,4-trans, trans-hexadienoate anion.

26. The method of claim 22, wherein said composition further comprises at least one compound capable of increasing the solubility of said ingestible anti-corrosion agent.

27. The method of claim 1, wherein said composition further comprises a benzoate moiety.

28. The method of claim 1, wherein said composition comprises a propionate moiety, a 2,4-trans, trans-hexadienoate moiety and a benzoate moiety.

29. A method for preventing oxidative corrosion of a metal said method comprising the steps of:

providing a metal or a device containing a metal wherein said metal is susceptible to oxidative corrosion;

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preparing an anti-corrosion solution, said solution comprising an effective amount of an anti-corrosion agent dissolved in a polar solvent, said agent comprising a C1-C6 carboxylic acid moiety; and

continuously immersing said metal or said device in said solution.

30. The method of claim 29, wherein said C1-C6 carboxylic acid moiety is in the form of a propionate anion.

31. A method for preventing oxidative degradation of a substance, said method comprising the steps of:

providing an anti-corrosion composition, said composition comprising an effective amount of an anti-corrosion agent, said agent comprising a lower alkyl carboxylic acid moiety, said composition further comprising a material capable of acting in conjunction with said anti-corrosion agent to prevent said oxidative degradation; and

mixing said composition with a preparation of said substance.

32. The method of claim 31, wherein said lower alkyl carboxylic acid moiety is a C1-C6 carboxylic acid moiety.

33. The method of claim 31, wherein said material capable of acting in conjunction with said anti-corrosion agent to prevent said oxidative degradation is methylcellulose.

34. The method of claim 32, wherein said C1-C6 carboxylic acid moiety is in the form of a propionate anion.

35. The method of claim 31, wherein said substance is a grain product.

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36. The method of claim 31, wherein said substance is a sweet cake dough.

37. The method of claim 31, wherein said substance is a plastic material.

38. A composition for preventing oxidative corrosion of a metal, comprising:

an effective amount of an anti-corrosion agent, said agent comprising a lower alkyl carboxylic acid moiety; and

a material capable of forming a moisture retentive barrier over a surface of said metal.

39. The composition of claim 38, wherein said lower alkyl carboxylic acid moiety is in the form of a lower alky] carboxylic acid anion.

40. The composition of claim 38, wherein said anti-corrosion agent and said material capable of forming a moisture retentive barrier over a surface of said metal are both provided in powdered form to produce said composition.

41. The composition of claim 40, wherein said composition is powdered in final form and is capable of being applied to a surface of said metal by powder metallurgy processing.

42. The composition of c]aim 40, wherein said composition is liquid or viscous in final form.

43. The composition of claim 38, wherein said material capable of forming a moisture retentive barrier over a surface of said metal is selected from the group consisting of a polar liquid, a

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non-polar liquid, a viscous material, an organic liquid, a polymeric material and a petroleum-based substance, and mixtures thereof.

44. The composition of claim 38, further comprising any one of a polar liquid, a non-polar liquid, a surfactant, an antioxidant, an organic liquid, a polymeric material, a petroleum-based substance, a buffering material, or graphite or particulate carbon in a suspension, and mixtures thereof.

45. The composition of claim 38, wherein said anti-corrosion agent is packaged for delayed release.

46. The composition of claim 45, wherein said anti-corrosion agent is encapsulated.

47. The composition of claim 38, wherein said anti-corrosion agent is present at a concentration from about 0.2 to about 60 percent by weight.

48. The composition of claim 38, wherein said anti-corrosion agent is present at a concentration of greater than about 20 percent by weight.

49. The composition of claim 38, wherein said composition is in the form of a gel, a colloidal suspension or a foam.

50. The composition of claim 38, wherein said lower alkyl, carboxylic acid moiety is derived from a C1-C6 carboxylic acid.

51. The composition of claim 38, wherein said lower alkyl carboxylic acid moiety is derived from a C1-C6 carboxylate anion.

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52. The composition of claim 51, wherein said C1-C6 carboxylate anion is selected from the group consisting of formate, acetate, propionate, butyrate and 2-methyl propionate, and mixtures thereof.

53. The composition of claim 52, wherein said C1-C6 carboxylate anion is associated with a cation selected from alkali metal or alkaline earth metal cations.

54. The composition of claim 53, wherein said cation is sodium.

55. The composition of claim 38, wherein said lower alkyl carboxylic acid moiety is derived from sodium propionate.

56. The composition of claim 38, wherein said anti-corrosion agent is ingestible by humans.

57. The composition of claim 56, wherein said composition further comprises at least one additional anti-corrosion agent that is different from said lower alkyl carboxylic acid moiety and that is also ingestible by humans.

58. The composition of claim 57, wherein said at least one additional anti-corrosion agent comprises a 2,4-trans, trans-hexadiene moiety.

59. The composition of claim 58, wherein said 2,4-trans, trans-hexadiene moiety is in the form of a 2,4-trans, trans-hexadienoate anion.

60. The composition of claim 38, wherein said composition further comprises at least one compound capable of increasing the solubility of said anti-corrosion agent.

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61. The composition of claim 38, wherein said composition further comprises a benzoate moiety.

62. The composition of claim 38, wherein said composition comprises a propionate moiety, a 2,4-trans, trans-hexadienoate moiety and a benzoate moiety.

63. A method for preventing oxidative degradation of a substance, said method comprising the steps of:

providing a composition comprising an effective amount of methylcellulose, a propionate moiety, a 2,4-trans, trans-hexadienoate moiety and a benzoate moiety; and

mixing said composition with a preparation of said substance.

64. The method of claim 63, wherein said substance is a grain product.

65. The method of claim 63, wherein said substance is a sweet cake dough.

66. A composition for preventing oxidative degradation of a substance, said composition comprising an effective amount of methylcellulose, a 2,4-trans, trans-hexadienoate moiety and a benzoate moiety.

67. The composition of claim 66, further comprising a propionate moiety.

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68. A method of preparing a food and/or beverage preservative, comprising:

adding a food grade polymer to an aqueous solution under conditions sufficient to hydrate said polymer;

adding an ingestible anti-corrosion agent to said hydrated polymer to form a preservative composition.

69. The method of claim 68, further comprising the step of diluting said preservative composition.

70. The method of claim 68, wherein said food grade polymer is methyl cellulose.

71. The method of claim 68, wherein said ingestible anti-corrosion agent comprises a propionate moiety.

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